

Can extra bacteria give lamb meat extra shelf-life?

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Introduction: Currently, fresh lamb meat primarily relies on refrigeration and packaging to maintain quality in the supply chain. While such measures are effective in themselves, the shelf-life of this high-value perishable product is often inadequate, which leads to increased food waste and economic losses. Although there are various possible ways to further extend fresh meat shelf-life, providing a solution to meet modern consumers' demand for more natural and minimally processed food is challenging. A recognised natural preservation method is the use of bioprotective cultures to suppress the growth of spoilage bacteria. As there is limited information on the efficacy of this approach for lamb meat, the aim of this work was to investigate the potential of bioprotective cultures to extend the microbial shelf-life of chilled lamb meat.

Materials and methods: This work first tested the efficacy of several food-grade bacterial cultures in combination with some common packaging systems. The promising culture and packaging combinations were then selected and further investigated to understand their effect on spoilage bacteria and other meat quality attributes during refrigerated storage. Bioprotective cultures tested in this work comprised lactic acid bacteria and coagulase-negative staphylococci.

Results: Bioprotective cultures could significantly reduce the growth of spoilage bacteria while having minimal impact on meat colour, pH, and texture. The efficacy of the cultures varied depending on the culture species composition and packaging system.

Conclusions: The findings support the use of bioprotective cultures in combination with current preservation practices as a natural method that extends the shelf-life of fresh lamb meat (and possibly other fresh red meat products) to help in reducing food loss and waste.

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